

FINAL WG 5, 12/9/04

**National Aquatic Animal Health Task Force—Meeting Report
Warmwater Finfish Pathogen/Disease Program Standards
Biloxi, Mississippi.
November 17-18, 2004**

Participants: Al Camus, Mississippi State University; Jimmy Carlisle, Alabama Catfish Producer; Andy Goodwin, University of Arkansas at Pine Bluff; Don Hoenig, Maine State Veterinarian; Max Rapert, Nature's Catch; Rob Schmid, Simaron Freshwater Fish; Ron Thune, Louisiana State University Agricultural Center; Jeff Trehune, Auburn University; Hugh Warren, Catfish Farmers of America; David Wise, Delta Research and Extension Center.

Task Force: Kevin Amos (NOAA-Fisheries), Guppy Blair (USFWS), Jill Rolland (USDA/APHIS).

1. Powerpoint Presentation: Overview of JSA, Task Force, and the Purpose of NAAHP – Amos. Discussion followed on the history of the NAAHP, why the first attempt by the Task Force, which formed in the early 1990's, failed (perception was that it appeared too regulatory in nature and industry became dis-engaged). Vision and goals of today - discussion on needs and roles of States and industry in a health plan; Brief discussion on eradication and indemnity – how is APHIS doing it? One participant brought up issues of obtaining certificates for interstate commerce and asked what the role of NAAHP is in dealing with it. Currently, health certificates are not required for interstate commerce of catfish, tilapia, or striped bass in the Southeast. Some are required in other states such as California for product coming from the Southeast. The principle of zonation and how it might impact commerce and endemic diseases was discussed. The Southern region appears to be considered as one contiguous zone by farmers. In the case where inspections or certificates might be needed, the value and need of certification standard guidelines was recognized.

2. Review of ISA & SVC disease control programs by APHIS as examples for consideration as a model for warmwater finfish – Rolland

Comments/questions by participants – What is the distance between pens in New Brunswick, Canada, and Maine? (Less than one mile.) Is the indemnification program for ISA over? (Yes, but a new request is being developed by APHIS to put forward to CCC for funding.)

3. Diseases of national importance for catfish, tilapia, or striped bass.

Generally speaking, there appeared to be agreement by stakeholders that the OIE and NAAHP listed diseases that occur in these finfish species in the Southeast region are endemic in all populations and do not meet the criteria established in draft Chapter 4 of the NAAHP as “program diseases”. Although there does appear to be some need to establish freedom of these diseases in the farmed populations, there appears to be no practical approach. This is because of the husbandry methods practiced and a perception

by the farmers that all diseases are everywhere and that they occur only when there is a problem with pond management.

Certification programs – Currently a patchwork of programs performed by various aquatic animal health professionals (State or Federal), labs (APHIS approved or not) and certificates are signed by various agencies (Fish and Wildlife Service, APHIS, other state and federal labs). The need for health certificates is limited to a few States outside the region which are requesting health certificates for live product that is shipped interstate. This is primarily for fingerling sales and for larger fish sold to pay fishing operations. Both of these markets are a very small percentage of industry sales.

Question by the group – What are the differences between reportable aquatic animal diseases (RAADs) (essentially these are the OIE diseases), and the program aquatic animal diseases (PAADs) listed in draft chapter 4? The PAADs are a shorter list than RAADs and are the ones that might be desired to have programs for. Currently, no PAADs are listed for catfish, striped bass or tilapia.

Don Hoenig suggested adding verbiage to the list of criteria of a PAAD (“...and for which industry desires to have a control and eradication program”).

Concerns were voiced of the need for support by industry of disease control programs and the need to address this issue, including restrictions on movement. Task Force members explained that intent of NAAHP was to help, not hinder aquaculture.

Participants thought that the protection of domestic finfish stocks from exotic pathogens is the greatest service that the industries need at this time. 90% of catfish fingerlings are raised in one area in Mississippi and an introduction of a new disease in this part of production could be devastating.

More exotic diseases seem to be appearing throughout the world and their source is unknown. Some of these are likely emerging diseases that are being found because of new diagnostic tools and because surveillance is occurring for the first time in some parts of the world. There does need to be a contingency plan in the U.S to deal with a new or emerging disease.

Streptococcus iniae is the major disease problem for the tilapia industry and is a world-wide problem. This is a manageable disease by broodstock management, husbandry, and vaccines.

A major issue with hybrid striped bass reported by one farmer is branchial mycosis (Aphanomyces).

A trematode (*Bolbophorous* spp.) is another disease issue within the catfish industry which can be spread by migratory birds (white pelicans).

Could there be a control program for the trematode? Issue is restricting or preventing the movement of wild pelicans which are the wild reservoir for this trematode. This is difficult/impossible to achieve as pelicans are protected wildlife.

All the farm-raised catfish originate from essentially the same population so all exposed to endemic pathogens. The fear is something coming into the industry from the outside.

Biosecurity within the zone of catfish production is not what is needed; what is needed is security in bringing new animals into the “zone”...for example, an Asian strain of catfish (ensuring they do not bring a pathogen into the “zone” with them).

Perhaps there is a risk for imported ornamentals infected with exotic pathogens escaping and transferring those diseases to catfish, bass, and tilapia? If something new is brought into the country, how would it be diagnosed and what might the time frame be between introduction and identification? Based on the difficulty for identifying “new diseases” as per the experience with ISA in Canada, and the nature of the catfish industry, a new disease could potentially be present for a long time and be widespread before being diagnosed.

Not all fish farms use technical services or diagnostic services on a routine basis – farmers, based on their experience, make diagnoses. This is also why a surveillance program could be difficult. Industry is moving in the direction of becoming more technically oriented (records, diagnostics, etc.).

How do farmers estimate losses and value of losses? Usually related to feed consumption by the pond and this is translated into an estimate of the standing crop.

There are some infectious disease problems in these industries, but they are widespread and mostly manageable. The greatest threat would be from imports. Are there any pathogens in foreign countries that could cross over to our domestic populations, diseases which we don't think we have here (or are limited in distribution)? Yes, there are some as follows:

Two catfish iridoviruses

Catfish herpesvirus

Piscirickettsiosis-like infection of tilapia (already in Florida, California, Hawaii and several other states).

Cichlid diseases from imported ornamentals that could potentially cross over into tilapia are of concern.

Some testing already being conducted for viruses such as CCV, and some data may exist on the absence of these aforementioned exotic viruses that could potentially contribute to a surveillance scheme as might be suggested in the NAAHP. Further discussions would be needed to determine if the current testing would comply with OIE standards for surveillance, etc.

4. Zonation

The entire U.S. is currently the “zone” for catfish, tilapia, and hybrid striped bass diseases, possibly excluding Hawaii and some territories.

If the U.S. can demonstrate that our animals are free of specific exotic pathogens via a surveillance scheme and have established zones which effectively prevent random or unrestricted introductions, the U.S. could require other countries wishing to export to the U.S. to issue health certificates for live aquatic species that could be carrying these exotic pathogens.

In other cases, a farm may wish to be its own ‘zone’ and have its own testing, etc. Zones can be farms, watersheds, states, areas, countries, continents, etc.

Tilapia are also raised in the Caribbean and South Pacific. Typically in these areas the farms are more village-industries and not big importers/exporters although overall the whole US tilapia filet market is supplied by large foreign farms. Participants were not aware of any marine diseases that have crossed over into tilapia, although tilapia can be transferred into full sea water.

Possibly contact fish health scientists outside the U.S., for example Rohanna Subasinghe (FAO), for disease concerns in other parts of the world that could impact our industries.

END DAY 1.

November 18, 2004. Day 2 of WG 5 Workshop

5. Surveillance

Frequent interstate commerce occurs with catfish and tilapia with minimal pathogen testing. There exists a “buyer-beware” mentality. With catfish it is not just fingerlings being moved, but also movement between ponds and farms of equipment and nets. No certification, health permits, etc. are required between most States. Industry does not want, nor do they see a reason for required certifications: one industry, one region exists, rather than by State. Fish are considered one population since original stocks were from only a few sources and are still shipped within the one area. CCV is everywhere, and it is expected that all stocks have been exposed already. No reliable tests exist for CCV to be able to call a fish negative for this pathogen/disease due to problems in detecting latent infections. Producers are more concerned with numbers and size of fish than infection with CCV. In catfish producing areas, there is random movement of harvesting equipment within the industry. California is one state with disease regulations for catfish with possibly a few other States in the U.S. having regulations, but not in areas where most commerce occurs. California does not allow tilapia imports but does allow striped bass – more an issue of escapees rather than of disease. There is a large domestic tilapia production industry in California with problems of escapees in large numbers.

Based on the industries today, some participants had the opinion that it could take a long time to detect or diagnose a new disease, possibly years, with high likelihood of its spread before determining the cause. One example would be the distribution of the trematodes moving from Louisiana to Mississippi during the time of 1992 to 1998, before it was recognized. However, others felt that a highly pathogenic bacteria or virus would be likely to be cultured and identified fairly quickly unless it was a pathogen that would not grow in culture. Farmers often diagnose diseases themselves and treat with the few over-the-counter antibiotics available. Any new antibiotics will probably require veterinary prescription. However, antibiotic use is very rare. Enteric septicemia of catfish is treated primarily by feed withdrawal. Only one catfish disease (columnaris) is sometimes treated with antibiotics. Some testing and bio-security could potentially decrease disease occurrence, but industry may not choose to participate and/or pay for the expense. However, it was recognized that an active surveillance program may be beneficial for keeping out the exotic diseases.

Slaughter surveillance could be one mechanism to evaluate pathogen prevalence, but might not work well with the catfish diseases and diagnostic tests that we have now since adults are survivors and disease detection is very difficult at this stage. The unknown exotic viruses are the biggest threat to the industry which might be introduced via import of live aquatic animals from other countries. For salmonids, there is a list of pathogens for required testing for importation.

The question was raised of if replicating agents were found in tissue culture of fish to be shipped to the US, but the virus was not identified as a listed pathogen, can imports of fish into the US be blocked? OIE guidelines provide a process by which new and emerging diseases will be reported to OIE. Possibly a list of countries could be kept that the US does not import from if these countries have the iridoviruses for catfish or herpes virus. The U.S. still would need to show that the pathogen/disease does not exist here first if its entry into the U.S is to be restricted. This list would need to come from the industry to be given to the Federal competent authorities to implement.

Can we have the NAAHP without the participation of the catfish industry? The catfish industry may be able to participate without new regulations as there are many aspects to the NAAHP. Increased participation could also be driven by State regulations or international partners in the future. As improvements are made in the domestic stocks, such as development of genetic lines, export of these fish lines may not be allowed by the industry. Some States have come up with animal health regulations for catfish but these regulations were negotiated with the industry.

Ongoing concern was raised by some of the participants that the NAAHP is a regulatory program. Reassurance was given by the Task Force that the NAAHP is not a set of regulations as in the recent court ordered EPA effluent rules and guidelines controversy. Comparisons to other terrestrial animals and their health programs may be helpful. In tilapia, Canada has started testing, for example, for malachite green. One-third of US live tilapia are exported to Canada. There are also problems of importing tilapia from Mexico

including heavy metal testing. State human health or environmental issues are involved but the human-health issues are not within the purview of the NAAHP.

There may be parts of the NAAHP that the industry may see benefits in and have more participation in.

Some unknown diseases coming in from different species could be potential problems for the industry, but how could they be regulated? For example, aquarium fish being released into natural waters. If the disease is contagious to humans, (a public health issue) it would be given much attention and funding in order to deal with it. What economic impact would regulations on the import of ornamentals have? For salmonids, USFWS Title 50 appears to have had success in prevention of disease introduction. Jimmy Carlisle gave comparisons of catfish culture to poultry and how the two have evolved in animal health issues. The poultry industry has contingency plans in place, so that farmers and the government can react immediately in the face of a disease emergency. The poultry industry today couldn't exist without the plans they have due to the large volume of movement of birds and emerging diseases. At what level does aquaculture need this in terms of regulations and participation by State wildlife agencies? Texas Parks and Wildlife Dept. does not want to include aquaculture with agriculture. Large differences exist between States with some State departments involved in aquaculture having adversarial relationships with the industry. It is a goal of the Task Force to bring diverse interests in States together in future meetings in order to work through these conflicts.

For catfish, possibly the greatest need is in plans for crisis, emergency plans.

Is there a need for health certificates, or testing for the States that require them? Is there a need for a standardized health certificate? Rarely is there a need for certificates. There have been only a few requests for catfish transfers in States that have regulations for health certifications. The improved fish line for catfish cannot be exported out of the US. Imported channel catfish from China could be an issue. These would be more of economic, human health issues involving chemical uses and residues. Risk assessments may be needed even for dead products imported that could be harboring pathogens. For example, Foot and Mouth Disease of livestock in the UK started by imported product/garbage fed to pigs uncooked. Fish proteins are also used in feeds which could be a potential pathway to transfer diseases. However, these may be minimal risks as compared to human health issues. If a list of diseases of concern is developed, could this list be used for terrorists to know what to target for food safety? Most likely, a list would not contain anything that they would not know already.

Example was given of the first VHSV finding on the West coast with an unknown rhabdovirus showing up on cell lines in routine surveillance. There are no protocols in place now in the catfish industry for finding something new. Are there indemnification funds for shutting a facility down to investigate an unknown? Request would have to be made to APHIS and indemnity would depend on several factors. A contingency plan would help for immediate reaction. Don Hoenig gave an example of Avian influenza

where State contingency funds paid for initial costs before federal funds stepped in. Industry can also start funds for these types of plans. Have some industry wide plans already been developed by the industry itself for contamination issues? There is an industry plan already in place primarily for response to human health issues that could also be used for animal health issues. The industry plan is not a public document, but for internal use only. With the NAAHP, funding could come much faster than with scenario of using the plan the industry has now and then lobbying for funds. If serious enough, industry could realign assets in the short term to deal with an emergency quickly.

Under OIE, there is an expectation of members reporting a suspicion of disease in a timely fashion. Also, there are challenges of identifying virus strains which are causing mortality.

Funds for diagnosis of a disease could be from the State, check-off funds for consultation by phone line, or a straight fee for tests for about 25% of farmers in Mississippi. There is a requirement under INAD treatments to have a confirmed diagnosis for tilapia. No fish health professionals are known to be hired by farmers. Currently there is a network of state/federal and University labs that provide diagnostic services with a mix of free or fee based services. There are no classical client/DVM relationships known in the catfish industry.

Are there catfish grown in South America? Yes, there are some catfish grown in South America, but are not native.

Are there migratory bird issues? Yes, pelicans, cormorants. Birds are now over-wintering, outside of their natural range, around fish farms. FWS has a cormorant control program; birds are also affecting the environment for homes and sport fishing. APHIS Wildlife Services are involved in bird control programs, as well as State programs.

Are there problems of logistics for testing? Yes, especially for Texas. Only Texas A&M performs testing on aquatics. Great distances between farms and labs exist causing the transportation of samples to be difficult and increasing shipping costs. Texas labs may also not have as much experience for some species and samples may still be sent to the Stoneville, MS diagnostic lab. Most producers do know where to send samples and what lab services are available, but costs and logistics are problems for producers in making the effort to have diagnostics performed. There can be problems with quality of samples, especially in Texas due to distance. Only one extension agent is available in Texas for aquaculture with limited support. It would be ideal if this person would coordinate the effort for sampling and diagnosis in an expansion of this position.

6. Emergency Contingency Planning

The Australian federal government has developed plans including emergency simulations for training readiness. Hugh Warren mentioned that industry contingency plans are already in place for contaminants. These plans may be able to be adjusted for a disease outbreak emergency. States are involved in contaminant testing. Industry does a good job of self-monitoring. One problem seen is a difference in the threshold levels for wild-

caught vs. farm-raised fish. This demonstrates that the wording used in a plan can be very important.

Homeland security has required contingency planning for terrestrial animal diseases. An outbreak of a foreign animal disease could be considered a crime scene (intentional introduction of disease). Until proven that it is not an intentional introduction, FBI and not Agriculture, is the lead agency in the investigations. USDA APHIS uses the Incident Command System (ICS) in such an emergency.

All States have emergency plans for the introduction of a foreign animal disease. Industry was involved in developing these plans. The National Animal Health Emergency Management System allows for coordination. There is an attempt to draw aquaculture in through the group at the United States Animal Health Association (USAHA).

Food and agriculture is part of the critical infrastructure and must be considered in emergency planning in order to protect food production and distribution.

Industry would normally take care of this kind of issue, but with homeland security and the way the world is changing, it would be important to be involved before it is handed down to industry. However, we have not identified any diseases that would warrant this kind of a response other than the few exotic viruses discussed earlier. Or it would have to be a new, as of yet unknown, disease/pathogen. Likely, there will not be such diseases that would emerge.

Anytime animals are raised in an intensive system, new pathogens are likely to show up. Examples include BSE in cattle and West Nile virus in birds. It seems likely that a new disease may emerge in catfish as well. Pathogens often become more virulent when they cross species barriers and with fish, pathogen sources are likely other fish or aquatic animals. No pathogens in aquatics are known to have the type of impact that BSE or highly pathogenic avian influenza can have.

Traceability and identification issue: Identification would be required for birth to slaughter and would not address human health issues. Catfish already have a lot number for traceability from farm to processor.

The tilapia industry is small and probably will not increase as they serve an ethnic market. Therefore lack of expansion equates with little need for participation in the animal identification program for the future. Emergency plan for tilapia = react! However, it would be beneficial to have a plan in place ahead of time instead of putting out fires. An example of this would be “mad fish” disease in Toronto.

Workshop evaluation forms were completed by participants.

Tour of National Seafood Inspection Laboratory, NOAA, in Pascagoula, MS was given by Angela Ruple and John Tennyson.

Meeting adjourned.

Feedback from participants:

- Overall, high points were given for the workshop organization, effectiveness of facilitators, and meeting facilities.
- Positive feedback was also given from participants for improved and enhanced understanding of the efforts of the Task Force and emerging aquatic animal health concerns.
- Most participants supported the concept of the working group and the amount of time devoted to the working group discussions.
- In summary, the hybrid striped bass group may have more interest in a NAAHP if more representatives had been present at this meeting since some farmers live by interstate and international movements of hybrid stripers. Any program that would simplify these shipments would be desirable and useful to them.
- The tilapia growers are concerned about biosecurity and protecting the tilapia from exotic diseases. Any disease that cichlids get would be a concern to the tilapia industry. Cichlids make up a large portion of the ornamental fish industry with many of them wild caught versus cultured. Further discussions may be needed to determine what testing would need to be conducted on cichlid imports.
- The catfish industry is currently subject to few fish health regulations and does not export so any program would have a low benefit to effort ratio. The catfish industry moves so many fish throughout the southeast and with so little concern for biosecurity that the entire industry is more like one farm than several. They do not worry about domestic disease spread because of the perception that diseases are everywhere and that outbreaks are triggered by adverse environmental conditions. The industry is interested in protection from exotic diseases and may be willing to allow the US surveillance required to prohibit the introduction of exotic catfish pathogens into the US.